PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference PCB/P089567PWO	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/GB2005/000769	International filing date *(day/month/year)* 28 February 2005 (28.02.2005)	Priority date *(day/month/year)* 27 February 2004 (27.02.2004)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant AI2 LIMITED		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 8 sheets, including this cover sheet.

   In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

	Date of issuance of this report 30 August 2006 (30.08.2006)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Nora Lindner e-mail: pt02@wipo.int

Form PCT/IB/373 (January 2004)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/GB2005/000769	28.02.2005	27.02.2004

International Patent Classification (IPC) or both national classification and IPC
A61K38/10, A61K38/17, A61P31/04

Applicant
THE UNIVERSITY OF MANCHESTER

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notifed the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/GB2005/000769

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

   ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

   a. type of material:

   ☐ a sequence listing

   ☐ table(s) related to the sequence listing

   b. format of material:

   ☐ in written format

   ☐ in computer readable form

   c. time of filing/furnishing:

   ☐ contained in the international application as filed.

   ☐ filed together with the international application in computer readable form.

   ☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-25,27-29,31-34
	No:	Claims	26,30
Inventive step (IS)	Yes:	Claims	1-25,27-29,31-34 (but see below)
	No:	Claims	26,30
Industrial applicability (IA)	Yes:	Claims	1-34
	No:	Claims	

2. Citations and explanations

see separate sheet

V. Reasoned statements

Initial remark:

It should be noted that relevant E-documents, if any, may be published up to August 2006 (depending on the priority rights).

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The following documents will be referred to in this opinion:

D1 = WO - A - 03/026479
D2 = Peptides; 2000, pages 327-330
D3 = Journal of Lipid Research; 1995, pages 80-88
D4 = WO - A - 00/66145

1. Novelty (Article 33(2) PCT)

1.
Claim 26 lacks novelty because SEQ 68 is known from D3, see the (141-150) Dimer on page 81.

Furthermore, the claim lacks novelty because of the term "comprising", which is non-limiting.
In other words, any longer sequence, including the known apoE, is also covered by the claim.
See D2 (implicit for SEQ 4) and D4 (for SEQ 3).
In the latter cases, novelty could be restored by restricting to the specific peptides.

2.

Claim 30 lacks novelty, at least with respect to SEQ 3 of D1 (= SEQ 6 of the Application) and the sequences of D2-D4; note that the claim is

unclear because it seems to include every nucleotide encoding peptides of Claim 1 etc (most of which are known for anti-viral activity).
Novelty can be restored by restricting to the peptides of Claim 26, except for the known SEQ 68.

2. Inventive step (Article 33(3) PCT)

The Application refers to peptides (mostly known) from apolipoproteins, and their use as antibacterial agents.

1.
One of the specific peptides does not exhibit the particular feature of the repeated -RKR- motif; see SEQ 4 of Claim 26.
A similar peptide, apoE (133-162), is disclosed in D2 with comments about its strong antibacterial activity.
It would have been obvious to the skilled man that closely related peptides would be active too, and the present one could be found by routine work without the need of any inventive activity.
Whereas the comments on page 2 of the Description (about the peptides of this document) may be correct, the same yardstick should be applied where the Applicant claims variants and truncations unless supported by test data; i.e. minor variations may result in a marked drop of antibacterial activity.
See also 3.7 below.

2.
The known peptide SEQ 6 (= D1) has two -RKR- motifs and has been proposed for use against i.a. bacterial sepsis.

This will have two implications: (i) other related peptides can be expected to have a similar activity, and (ii) how to distinguish a use against bacterial sepsis from the claimed anti-bacterial use ?
Perhaps the same mechanism is involved ?
It is foreseen that some restriction (e.g. a disclaimer for use against sepsis, or a restriction based on the test data) will be necessary, but this has to be settled in a later national/regional phase according to applicable regulations.

3. Certain observations for a later phase

1.
Claim 1 should be restricted to the presence of at least two -RKR- motifs; firstly, this is an essential feature, and secondly, the term "repeats" is so unclear that the peptide apoE (133-162) of D2 would be novelty-destroying if (2 x) RLA or (2x) LRK are seen as the motif.
The same applies to the independent Claim 16.

2.
The drafting "...a peptide, or a derivative or analogue thereof..." in certain claims is unclear/superfluous.
It appears that "whatever" must comprise what follows as definition (in which case it is enough to refer to "a peptide"); in case something else is intended to be encompassed (in addition) it should be clearly defined.
Undefined compounds cannot be accepted in the claims.

3.
Claims relating to "or truncations thereof" should be clarified because a truncation could be any smaller fragment (even without a repeat).

4.
Claim 31 does not exclude a method of treatment (object/surface = the body).

5.
The statements on page 28 (lines 5-20) has no clear interpretation with regard to the intended protection.
No such agents have been provided.
See also pages 33-37 and 42 concerning "agents" (=?).

6.
The statement on page 43 (top) is unclear and should be deleted.

7.
Concerning the peptide of SEQ 4, lacking the -RKR- repeat, a question of non-unity, Rule 13 PCT, may arise.
That could, possibly, be seen as "invention 2", an improvement of a prior art peptide, whereas "invention 1" relates to "-RKR-" repeats.

8.
The Description has to be adapted and restricted to any amended set of claims and the document D1 should be identified as relevant background art under Rule 5.1(a)(ii) PCT.
References to documents not available at the filing date may not be accepted in a later European phase; see page 3.

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